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**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 09/330,594 | 06/11/99 | FAN | S 41616-A |

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KIRBY EADES GALE BAKER
P O BOX 3432 STATION D
OTTAWA ON K1P 6N9
CANADA

HM12/0118

AIR MAIL

| EXAMINER | |
|-----------------------|--------------|
| GRUNBERG, A | |
| ART UNIT | PAPER NUMBER |
| 1661 | 7 |
| DATE MAILED: 01/18/01 | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/330,594

Applicant(s)

Fan et al

Examiner

Anne Marie Grunberg

Group Art Unit

1661



☒ Responsive to communication(s) filed on Nov 3, 2000

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-72 is/are pending in the application

Of the above, claim(s) 63-71 is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-62 and 72 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Election/Restrictions

Applicants elected, without traverse, the claims in Group I, claims 1-62 and 72, per the response dated 11/3/00 (paper #6). Applicant should cancel claims 63-71 since they are drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 4, 6, 8-9, 15-18, 21-23, 34-35, 39, 46, 48-49, 53-55, 60-62, and 72, and dependent claims 2-3, 5, 7, 10-14, 19-20, 24-33, 36-38, 40-45, 47, 50-52, and 56-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "pre-germinated" as it relates to a somatic embryo is not clearly understood. The specification on page 12, defines "Pre-germination" as "the germination of somatic embryos which are harvested and subsequently sown into non-sterile growing media for *ex vitro* re-germination, or alternatively, desiccated and stored prior to sowing and re-germination." It appears from this definition and the definition of "Germination" preceding it, that a mature

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embryo having reached the "cotyledonary" stage of development (such as is described in US patent 5,482,857 for instance), is "pre-germinated." However, this is not clear and should be clarified. Applicant is reminded that no new matter may be added to the specification or claims.

Claim 1 is also indefinite since it is drawn to a process of producing a somatic seedling. However no step in claim 1 reflects the production of such a seedling.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-62, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al in view of Attree et al and Gupta et al.

Claims 1-62 and 72 are drawn to a process of producing a somatic seedling from a somatic embryo wherein a somatic embryo is pre-germinated in contact with a liquid medium, optionally contacted with ABA, optionally dried, placed on or in a three-phase substrate, put in a plant growing environment, wherein the environment is controlled such that re-germination of the embryo occurs, and wherein water and/or nutrients are supplied at regular intervals. The somatic embryo may be placed in contact with the liquid medium for a period of time and the medium may contain sucrose. The pre-germinated somatic embryo may be placed in the ABA solution for a certain amount of time and contains a particular amount of ABA. The pre-germinated embryo may be dried to a moisture content between 5 and 75% or otherwise placed in a state of physiological dormancy. A range of environmental factors are also claimed, and a range of nutrient solution intervals are claimed as well. Somatic embryos may be from an angiosperm species or gymnosperm species. The pre-germinated embryo may be stored in various ways for a certain period of time. The solid phase of the three-phase substrate may be composed of various material, and the three-phase substrate may contain a wetting agent, moisture content, nutrient solution, fungicide, and insecticide. The three-phase substrate may be contained in various horticultural containers. The somatic embryo may be placed in the three-phase substrate in various ways. The nutrients and methods of nutrient application claimed have various substrates, quantities, and methods of application well known in the art.

Quote

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Fujii et al teach different systems of producing artificial seeds for plant propagation. Fujii et al teach the production of high-quality somatic embryos, such as desiccated, uncoated embryos (Fig. 2). Fujii et al also teach fluid drilling of somatic embryos (Fig. 2). Fujii et al also teach artificial soil conversion under soil conditions (page 338, column 1). Soil is by nature a three-phase substrate which includes solids such as sand, silt, clay, peat and other organics, as well as water and air. Fujii et al teach that ultimately artificial seeds will need to form whole plants under greenhouse and other controlled conditions, as well as field conditions.

Fujii et al teach the benefits of using somatic embryos for artificial seeds, but they do not teach specifics such as are claimed in the instant application. For this, it would have been obvious to use any number of efficient somatic embryogenesis and regeneration methods such as is taught by the following scientists.

Attree et al teach a process of producing a somatic seedling from a somatic embryo (column 22, lines 16-18), wherein a somatic embryo is pre-germinated by placing the somatic embryo in contact with a liquid medium used for pre-germinating somatic embryos to produce a pre-germinated somatic embryo (column 6, lines 55-56; column 7, lines 10-13; Fig. 4, column 9, lines 23-26, column 19, lines 52-55). Due to the indefiniteness of the definition of pre-germinated, the examiner deems that it also includes any maturation of the somatic embryo, especially the cotyledonary stage. Attree et al also teach contacting the pre-germinated somatic embryo with a solution of abscisic acid (ABA) (column 7, lines 30-36; column 8, lines 24-31, column 34, lines 32-38, for example), and optionally drying the pre-germinated somatic embryos

Quote

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(column 7, lines 39-44, for example). Attree et al also teach that somatic embryos also usually require pre-germination and greenhouse acclimatization prior to planting in the field (column 6, lines 55-56) and that fluid drilling has been used for pre-germinated seeds (column 6, lines 58-59).

Gupta et al teach that somatic embryos may be germinated before or after storage and transplanted to soil for further growth (last sentence of the abstract). Germination before storage would constitute "pre-germination".

It would have been *prima facie* obvious to a person of ordinary skill in the art at the time the invention was made to utilize the method of producing artificial seeds using somatic embryos as taught by Fujii et al., and to modify that method by incorporating the method of producing the somatic embryo taught by Attree given that any method of producing high quality somatic embryos can be used to produce artificial seeds as taught by Fujii et al, and pre-germinate the somatic embryo as taught by Gupta et al. (even if a more stringent definition of "pre-germination" is used, given that Attree et al teach that somatic embryos usually require pre-germination). It is well known in the art how to apply water and/or nutrient solutions at regular intervals during the period of somatic embryo re-germination to the surface of the substrate in the form of microdroplets or by irrigating or drenching the three-phase substrate such that pre-germinated somatic embryo re-germination, growth and development occur. Specific media type, substrates, nutrients, amount of ABA, desiccation particulars, plant growing environments.

Quote

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storage techniques, pesticides, horticultural containers, seeding equipment, and other such techniques are well known in the art and represent the optimization of process parameters.

Quote

No claim is allowed.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne Marie Grünberg whose telephone number is (703) 305-0805. The examiner can normally be reached Monday through Thursday from 6:30 a.m. to 4:00 p.m. and alternate Fridays from 7:00 a.m. to 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell, can be reached on (703) 308-4205. The fax phone number for this group is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

AMG

Bruce Campell
BRUCE R. CAMPPELL, PH.D.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600



myPCard.com
Cash Expense Claim

Cash Expense Summary for Hank Bier

Printed On: 23 Feb 2004 15: 3:52 pm

| Expense Date | Expense Type | Amount | |
|------------------|---|-------------|------------------|
| Expense Item | Item Details | Item Amount | Line Amount |
| GL Code | Cost Centre | Tax Code | |
| 26 Jan 2004 | Mileage (< 3000 km) | | NZD \$ 49.60 |
| 4580000 | 9257130 | N/A | \$49.60 |
| Mileage | 80 Km | \$ 49.60 | |
| Trip Details | 14 Jan FRI to review progress overlap sample testing. 8 km. 15 Jan ditto 8 km 26 Jan FRI to discuss wood hardening technology. 8 km 2 Feb, FRI for presentation from chemist on potential value of sap extracts 8 km. 4 Feb FRI to discuss ecofil adhesives filler project 8 km 13 Feb FRI review progress hyspan overlap tests. 8 km 16 Feb Airport return for plane to Lead team meet. 24 km 23 Feb To FRI to deliver and discuss sap samples for extractives (turps Project) 8 km. | | |
| 01 Dec 2003 | General Expense | | NZD \$ 22.20 |
| 4580000 | 9257130 | 12.5% NZ | \$22.20 |
| Miscellaneous | | \$ 22.20 | |
| Expense Details | 1 Dec 03, refreshments travelling to site visit for all tech team. | | |
| 21 Jan 2004 | General Expense | | NZD \$ 8.50 |
| 4580000 | 9257130 | 12.5% NZ | \$8.50 |
| Miscellaneous | | \$ 8.50 | |
| Expense Details | coffees and snack on trip to and frm Manukau meetings (KA's and budgets) | | |
| 03 Feb 2004 | General Expense | | NZD \$ 5.50 |
| 4580000 | 9257130 | 12.5% NZ | \$5.50 |
| Miscellaneous | | \$ 5.50 | |
| Expense Details | coffee and snack en route to Manukau for NZ team structure meet | | |
| 10 Feb 2004 | General Expense | | NZD \$ 11.00 |
| 4580000 | 9257130 | 12.5% NZ | \$11.00 |
| Miscellaneous | | \$ 11.00 | |
| Expense Details | Coffees and refreshment for self and Jeremy Christmas, on way to Technical meeting NZ market meeting | | |
| 16 Feb 2004 | General Expense | | NZD \$ 5.50 |
| 4580000 | 9257130 | 12.5% NZ | \$5.50 |
| Miscellaneous | | \$ 5.50 | |
| Expense Details | rest stop coffee and cake at the Dome on way to LT meeting. | | |
| 18 Feb 2004 | General Expense | | NZD \$ 9.00 |
| 4580000 | 9257130 | 12.5% NZ | \$9.00 |
| Miscellaneous | | \$ 9.00 | |
| Expense Details | coffees at Dome on return trip, for self, Tosin and Pappalardo. Discuss Lead Team and NZ market issues. | | |
| 18 Feb 2004 | General Expense | | NZD \$ 12.95 |
| 4580000 | 9257130 | 12.5% NZ | \$12.95 |
| Miscellaneous | | \$ 12.95 | |
| Expense Details | Dinner at "Pink Pig" Maramarua on return journey from Lead Team meeting. | | |
| Total NZD | | | \$ 124.25 |

Claimant Declaration

I Hank Bier declare that the information contained on this form is correct, that the expenses incurred were for business purposes in accordance with Company Policy and that all receipts pertaining to expenses are attached.

Employee: Hank Bier

Employee Number: 102986

Signature: _____

Dated: ____ / ____ / ____

Approved By

Manager: Linda Sewell

Employee Number: 100104

Signature: _____

Dated: ____ / ____ / ____

On Completion

Please attach all required receipts to this form and forward to your designated area for storage.

Patents Act 1953

NOTICE OF OPPOSITION TO GRANT OF PATENT (SECTION 21)

We, Carter Holt Harvey Limited, of a company duly incorporated under the laws of New Zealand of 640 Great South Road, Manukau City, Auckland, New Zealand, hereby give notice of opposition to the Grant of a Patent upon Application No. 508752 applied for by SILVAGEN INC upon the ground(s)

GROUND 1 – Prior Publication

1. THAT the invention, so far as claimed in any claims of the complete specification, has been published in New Zealand before the priority date of any claim in one or more of:

- (i) PUBLICATION Fujii J.A., Slade, D.T., Redenbaugh, K., and Walker K. A. (1987) *Artificial Seed for Plant Propagation in Trends in Biotechnology 5: 335-439* (Available from Auckland University).
- (ii) PUBLICATION Fujii J.A., Slade, D., Olsen, R., Ruzin, S. E., and Redenbaugh, K., (1990) *Alfalfa Somatic Embryos Maturation and Conversion to Plants in Plant Science: 72:93-100* (Available from Auckland University).
- (iii) PUBLICATION Fujii J.A., Slade, D., Aguirre-Rascon, J., and Redenbaugh, K., (1992) *Field Planting of Alfalfa Artificial Seeds in In Vitro Cellular and Developmental Biology: 28P:73-80* (Available from Otago University).

GROUND 2 – Obvious and Lacking Invention

2. THAT the invention so far as claimed in any claim of the complete specification is obvious and clearly does not involve any inventive step having regard to any one or more of the following publications (all published in New Zealand as previously alleged in respect of Ground 1).

- (i) PUBLICATION Fujii J.A., Slade, D.T., Redenbaugh, K., and Walker K. A. (1987) *Artificial Seed for Plant Propagation in Trends in Biotechnology 5: 335-439* (Available from Auckland University).

(ii) PUBLICATION Fujii J.A., Slade, D., Olsen, R., Ruzin, S. E., and Redenbaugh, K., (1990) Alfalfa Somatic Embryos Maturation and Conversion to Plants *in Plant Science*: 72:93-100 (Available from Auckland University).

(iii) PUBLICATION Fujii J.A., Slade, D., Aguirre-Rascon, J., and Redenbaugh, K., (1992) Field Planting of Alfalfa Artificial Seeds *in In Vitro Cellular and Developmental Biology*: 28P:73-80 (Available from Otago University).

GROUND 3 – Not an Invention

3. THAT the subject of any claim of the complete specification is not an invention within the meaning of the Patents Act 1953.

Section 21(1)(f)

GROUND 4 – Infufficiency/Lack of Fair Basis

4. THAT the complete specification does not sufficiently and fairly describe the invention or the method by which it is to be performed.

Section 21(1)(g)

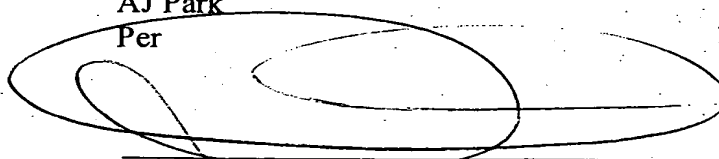
Communications should be sent to A J PARK, Intellectual Property Lawyers and Patent Attorneys, of Huddart Parker Building, 6th Floor, 1 Post Office Square, Wellington, New Zealand, who are hereby appointed to act for us.

CARTER HOLT HARVEY LIMITED

By the Authorised Agents

AJ Park

Per

A large, stylized handwritten signature in black ink, appearing to be 'AJ Park', is written over a horizontal line.

(Authorisation Code: P5/1/3455)

To the Commissioner of Patents
Lower Hutt, New Zealand